

**GREEN COMMUNITY
DESIGN ASSISTANCE PROGRAM**

**Local Energy Efficiency
Program Proposal**

January 15, 2002

Submitted in Response to:
California Public Utilities Commission
R.01-08-028
2002 Energy Efficiency Program Selection

Submitted by:
ADM Associates, Inc.
3239 Ramos Circle
Sacramento, CA 95827
Phone: 916-363-8383
Fax: 916-363-1788
Email: ADM@ADM-Energy.com

TABLE OF CONTENTS

<i>Chapter</i>	<i>Title</i>	<i>Page</i>
1.	Program Overview	1-1
2.	Program process	2-1
3.	Customer Eligibility	3-1
4.	Cost-Effectiveness Calculations.....	4-1
5.	Program Performance Goals	5-1
6.	Evaluation, Measurement and Verification Plans	6-1
7.	Description of ADM's Qualifications	7-1
8.	Timeline for Program Implementation.....	8-1
9.	Program Cost Proposal.....	9-1
10.	Attachments.....	10-1

1. PROGRAM OVERVIEW

ADM Associates, Inc. (ADM) is proposing a Green Community Design Assistance Program, which is a program to provide assistance to developers to improve energy efficiency in the new housing subdivisions and communities that they develop. Our proposed program builds on the work that we performed for Southern California Edison Company and Southern California Gas Company over several years through the Local Energy Assistance Program (LEAP), a program that we designed, developed and implemented.

1.1 BRIEF DESCRIPTION OF PROGRAM

Our proposed Green Community Design Assistance Program builds on the groundwork for improving energy efficiency in developing new housing subdivisions that we have laid with LEAP. Because of our work on LEAP, there are numerous communities in southern California where the local planning agency has become aware of what can be done to improve energy efficiency in the development of new housing tracts. The overall goal of the Green Community Design Assistance Program is now to work with developers to encourage them to prepare and build new housing developments that incorporate improved energy efficiency features.

We work to achieve these savings by offering developers direct technical assistance and support in preparing and submitting plans for new subdivisions in the service territories of Southern California Edison and Southern California Gas. The funding for the program is from electric public goods charges.

An overview of the design assistance process is shown in Figure 1-1. The direct assistance that we provide to developers will include development and refinement of housing subdivision plans, system analysis, and advocacy planning. Specific examples of this direct assistance include the following:

- Working as an integral member of the developer's team to provide energy efficient site planning and design concepts;
- Quantifying energy savings from alternative designs;
- Assisting in presenting energy efficient site planning and design concepts to local government planning agencies for approval; and
- Assisting in preparing the requisite documentation in support of energy efficiency concepts.

Through the Green Community Design Assistance Program we work with developers to help create livable communities that use less energy.

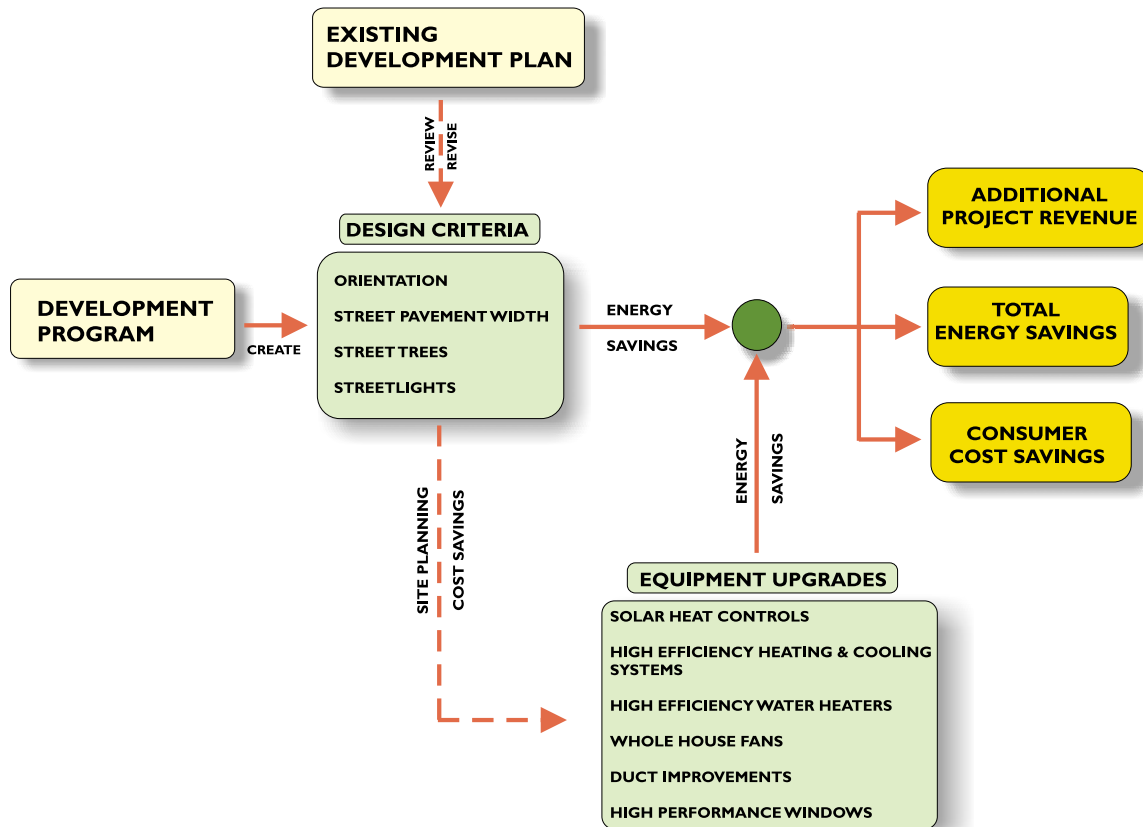


Figure 1-1. Overview of Green Design Assistance Process

1.2 PROGRAM RATIONALE

Through LEAP we worked with the planning agencies for 24 communities in southern California to promote and encourage energy efficiency in new residential developments that were being proposed in those communities. We provided technical review and assistance on subdivision plans that had been submitted to the planning agencies for approval. For these projects, we were able to recommend community-level and building-level energy efficiency improvements that would reduce energy use from Title 24 requirements by 15 percent or more. The “green community” design concepts included such measures as orienting most houses in a subdivision north-south, planting shade trees around houses, narrowing streets, and planting street trees to create canopies.

However, we discovered during our LEAP work that opportunities for improving energy efficiency in new housing projects were being lost because developers were not getting involved in the process until after they had prepared and submitted subdivision plans for approval. At that point it was more difficult to

make changes to the plans to improve energy efficiency because of the time and cost that developers had already put in. It became increasingly evident throughout the LEAP work that outreach and marketing to developers to provide assistance to them while they were in the process of preparing their plans would allow more consideration to be given to energy efficiency improvements in the development of their proposed subdivisions.

Without such assistance there is little incentive for developers to consider energy efficiency in their planning of new housing developments. Although significant energy savings may be achieved by better design of whole communities, a developer may not be able to get any benefits from the design of a “green community”. Title 24, for example, does not provide any credits to a builder for any energy efficiency improvements that result because he designed and built a “green” housing development.

1.3 PROGRAM OBJECTIVES

The overall goal of the Green Community Design Assistance Program is to work with developers to encourage them to prepare and build new housing developments that incorporate improved energy efficiency features. Table 1-1 provides summary information regarding the objectives for our proposed Green Community Design Assistance Program.

Table 1-1. Proposal Summary for Green Community Design Assistance Program

Program Name	Green Community Design Assistance
Program Category	Residential single family
Budget	\$298,240.00
TRC Ratio	4.68
PPT Ratio	7.80
Annual kWh Savings Target	2,129,250 kWh
Annual Peak kW Reduction Target	5,000 kW
Annual Therm Savings Target	N/A
Other Performance Targets	12 subdivisions in different communities
Program Strategies	Residential community design assistance
Target Market Segments	Residential new construction

As shown by the summary data in Table 1-1 and by the rest of our proposal, the Green Community Design Assistance Program that we are proposing satisfies various criteria that the CPUC has specified for local efficiency programs.

- It will provide long-term annual electric energy savings by helping developers of new housing tracts make their developments more energy efficient. It has a

high multiplier effect in that a single developer may be developing a new subdivision with hundreds of houses.

- The program is cost effective in the savings it provides per dollar of cost. The TRC is 4.68, and the PPT is 7.80. (These tests are documented in Section 4 and in the accompany spreadsheet.)
- It addresses a market barrier to more efficient residential new construction by working directly with developers to provide them the information and assistance that they need to build housing subdivisions that are more energy-efficient.
- It will provide peak demand savings by reducing the electric load for new houses built in the subdivisions for which technical assistance is provided.
- It is innovative in that it specifically targets housing developers, a group that has generally been neglected in programs to promote energy efficiency in new residential construction. It also uses an innovative, one-to-one marketing approach to work with individual developers to incorporate energy efficiency improvements into their plans for new housing tracts or subdivisions.
- The program has synergies with programs run by utilities and other entities in promoting energy efficiency in new residential construction. The proposed program is in line with local government initiatives and codes and standards development in that it promotes a cost-effective measure for complying with the Title 24 energy efficiency standards. It will also provide support to the development of standards credits for developers who incorporate community-wide energy efficiency considerations into their designs of new residential subdivisions.

2. PROGRAM PROCESS

Our process for the proposed Green Community Design Assistance Program builds directly on the process and procedures that we used over several years in implementing the Local Energy Assistance Program for SCE and SoCalGas. We already have in place all of the procedures needed to implement this Green Community Design Assistance Program.

We begin this section with a discussion of the rationale and design of the program and then provide a discussion of program implementation.

2.1 PROGRAM RATIONALE AND DESIGN

There are many actors involved in residential new construction markets, but the central actors with respect to developing and implementing the Green Community Design Assistance Program will be developers and homebuilders in the private sector and local government planning and building agencies from the public sector. Residential new construction represents an arena where private sector developers and builders and local government agencies interact on an almost daily basis. Recognizing the roles of these players and the market and regulatory environments in which they operate is important to designing and implementing the Green Community Design Assistance Program.

The major private sector actors in the residential new construction markets are developers and builders. Sometimes, the developer is also the builder. Under most scenarios, however, they are separate entities.

- Land developers are typically responsible for the design of the master plan, the procurement of project approvals (general plan, zoning etc.) and the implementation of project wide site improvements such as grading, major roadways, sewer/water/drainage facilities, streetscapes and parks among others.
- Builders (home, commercial, industrial) buy approved land from the developers and construct individual buildings, local roads and sewer/water/drainage lines needed to service that particular parcel of land.

Developers are typically referred to as being responsible for the ‘horizontal improvements’ whereas builders are responsible for the ‘vertical’ improvements. The relationship between developers and builders is depicted in Figure 2-1.

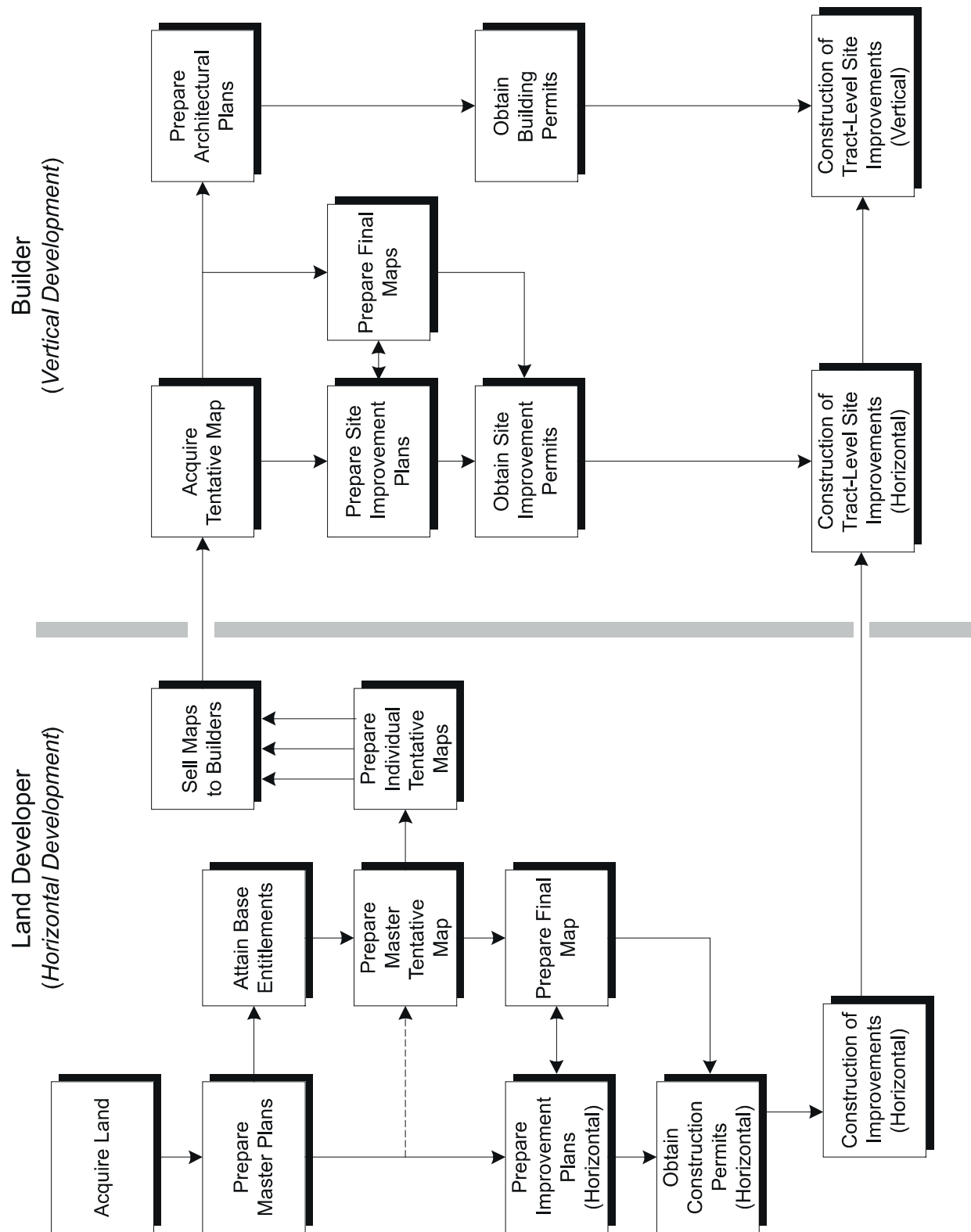


Figure 2-1. Relationship between Developers and Builders

Of these various players in the residential new construction market, all but the developers have been targets of energy efficiency programs. There of course are various programs for encouraging homebuilders to incorporate energy efficiency features into the new houses they build. Similarly, local government agencies have been involved in LEAP and other programs to improve energy efficiency. Although developers play an important role in the residential new construction process, they have not been a major target for energy efficiency programs.

Figure 2-1 shows the stages of development for a developer's activities. At any point in time, a developer may have some projects under construction and other projects in the process of being planned and designed. The underlying rationale for the Green Community Design Assistance Program is that there are both immediate and longer-run energy savings that can be achieved by working with developers and homebuilders on projects that are at various stages of development.

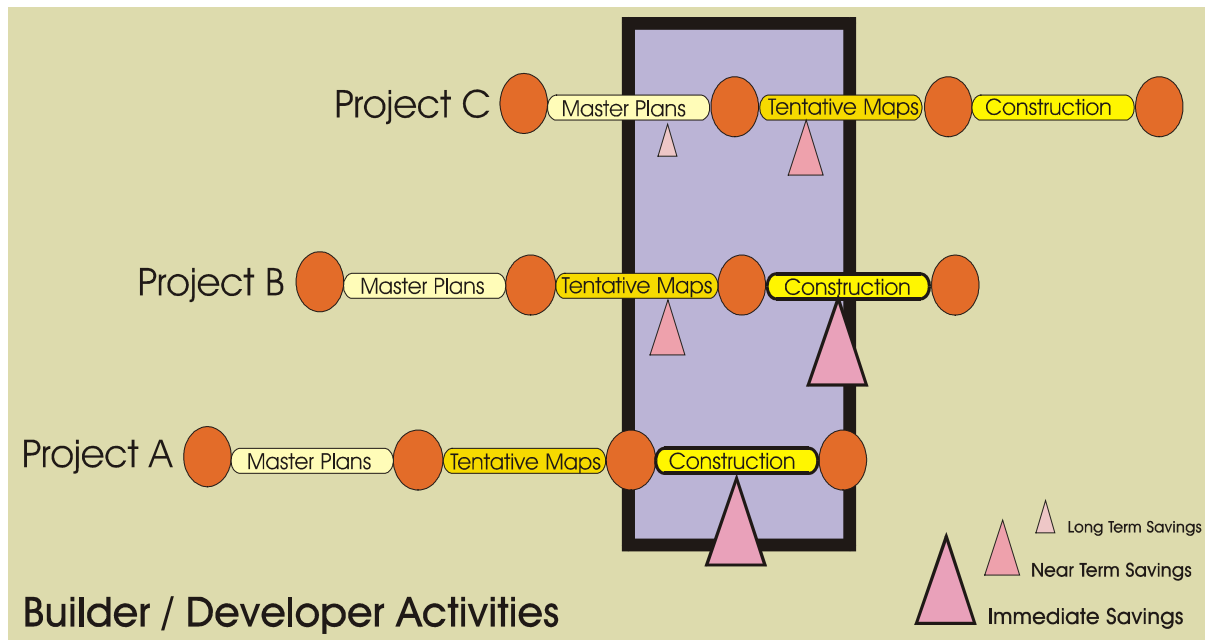


Figure 2-2. Schematic of Developer/Builder Activities

In practice, local governments exercise considerable discretion in approving development projects, including new housing developments. A schematic of the development approval process is shown in Figure 2-3. However, as pointed out in *Raising the Roof*, "the planning and development review process ... is fundamentally different in every municipality in which it is applied. Depending on the municipality, it may also be different for every project." Under these circumstances, the local government agencies that administer the development

approvals process have considerable discretion in approving or disapproving a developer's proposed housing projects.

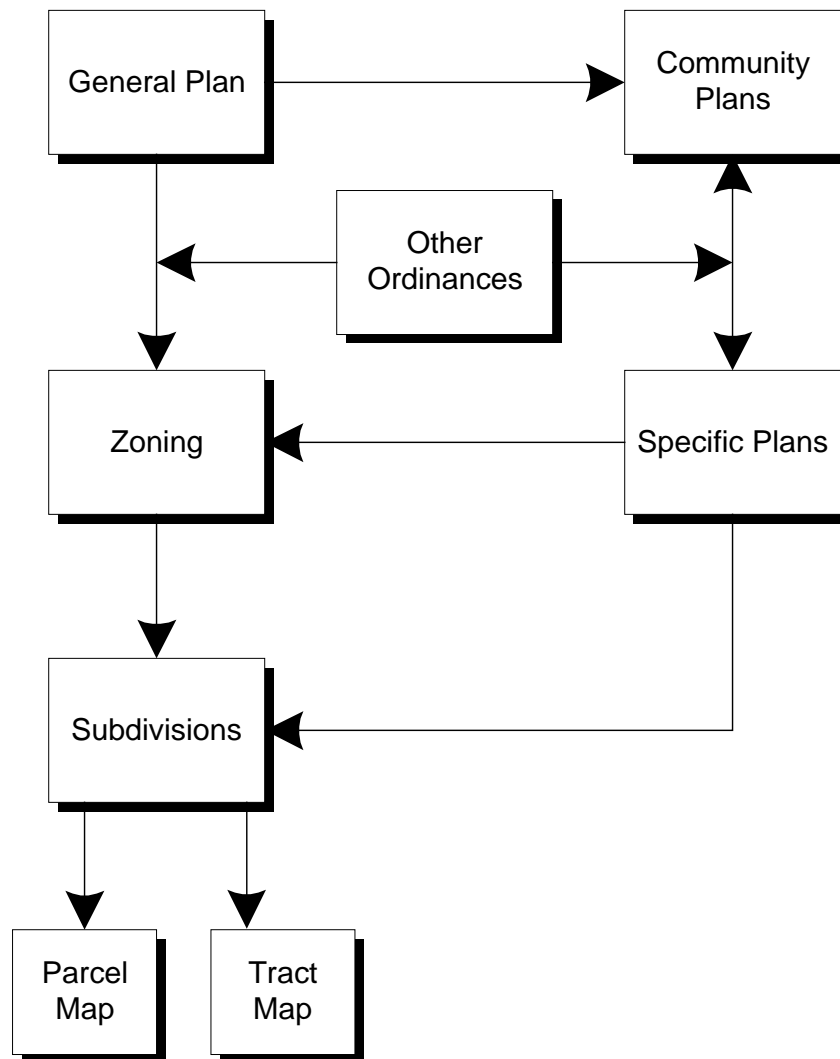


Figure 2-3. Development Approval Process

Through LEAP we worked with the planning agencies in 24 communities in southern California to promote and encourage energy efficiency in new residential developments that were being proposed in those communities. (See Table 7-1 in Section 7.) We provided technical review and assistance on subdivision plans that had been submitted to the planning agencies for approval. For example, as part of our LEAP work for Southern California Edison in one year, we performed energy assessments of new housing projects in SCE's service territory that represented about 9,600 dwelling units (roughly 20 percent of the total amount of residential new construction there). For these projects, we were able to recommend

community-level and building-level energy efficiency improvements that would reduce energy use from Title 24 requirements by 15 percent or more.

However, we discovered during our LEAP work opportunities for improving energy efficiency in new housing projects were being lost because developers were not getting involved in the process until after they had prepared and submitted subdivision plans for approval. At that point it was more difficult to make changes to the plans to improve energy efficiency because of the time and cost that developers had already put in. It became increasingly evident throughout the LEAP work that outreach and marketing to developers to provide assistance to them while they were in the process of preparing their plans would allow more consideration to be given to energy efficiency improvements in the development of their proposed subdivisions..

The purpose of the Green Community Design Assistance Program then is to build on and expand the groundwork that has been laid with LEAP. There are numerous communities in southern California where the local planning agency has become aware of what can be done to improve energy efficiency in the development of new housing tracts. The overall goal of the Green Community Design Assistance Program is now to encourage developers to prepare and build new housing developments that incorporate improved energy efficiency features. We work to achieve these savings by offering developers technical support in the form of reviews of Tentative Tract Maps and other development applications that could show quantifiable energy savings in the current year as a result of plan modifications. This action will ensure that energy efficiency is continued to be thought of as an integral element of plan development and that developers can work with local governments to adopt more energy efficient plans, policies and standards.

To illustrate the kind of subdivision design technical assistance and review that we are proposing to provide to developers through the Green Community Design Assistance Program, consider that work that we prepared on the Farinelli Ranch subdivision that was being proposed for development in the City of Escalon. (We prepared this report for the City of Escalon under earlier LEAP work for PG&E.) Based in part on our work on recommending energy efficiency improvements for this subdivision, the City of Escalon received an ACES award from the California Energy Commission. (See Figure 2-4.)

NEWS RELEASES

For immediate release: June 1, 2000
Media Contact: Claudia Chandler -- 916 654-4989

Escalon's Building Department Honored for Efficient Energy Use

The City of Escalon's Building Department will receive an ACES Award from the California Energy Commission for creatively encouraging the efficient use of energy.

Energy Commissioner Robert Pernell will present the award to Thom Clark, City Manager/Building Official of the City of Escalon Building and Planning Department, and J.D. Hightower, City Planner, at a city council meeting on Monday, June 5, 2000, at 7:30 p.m., at 1855 Coley Avenue in Escalon.

"Escalon's Building Department demonstrates a strong, positive attitude towards California's energy efficiency building standards," said Pernell. "The Energy Commission is particularly pleased how the Department works cooperatively with city planners to ensure that all new residential subdivisions include energy efficient designs in their plans."

As an example of the Department's forward thinking, Pernell cited the Farinelli Ranch development, where all homes were required to exceed California's energy efficiency standards requirements by 10 percent. To achieve this goal, the City required builders to install sunscreens, as well as water heaters and air conditioning units with higher efficiency than required by the Energy Standards. Neighborhoods were laid out with a north-south orientation of homes to reduce solar heat gain. Shade trees were also required on the east and west sides of the houses, to further reduce heat gain and cut air conditioning costs.

"These requirements will now be applied to all new subdivisions in Escalon," noted Pernell. "By coordinating energy efficient design with careful enforcement of the energy standards, the City is cutting energy bills while providing improved added comfort for its residents."

ACES stands for "Assuring Compliance with the Energy Standards." From more than 500 building departments throughout California, the City of Escalon was one of only eleven jurisdictions selected for an 1999 ACES Award.

David Martinez, 1999 President of the California Building Officials, added his congratulations to the ACES Award winners. "These building departments have demonstrated that a cooperative effort between the Energy Commission, the builders and the local building department can forge a unique alliance which results in energy savings that benefit all Californians."

In today's dollars, the Energy Commission estimates that Californians reduced their utility bills by \$79 billion since energy efficiency building regulations went into effect in 1978. In 1998 alone, energy savings from the State's building standards totaled \$1.4 billion and equaled the output of seven 700-megawatt power plants.

"Conscientious jurisdictions like the City of Escalon are helping to protect California's energy future," said Pernell.

###

Figure 2-4. News Release on City of Escalon ACES Award

As our Farinelli ranch work illustrates, various community-level and building-level options for improving energy efficiency can be examined, and their costs and benefits demonstrated. That work is an example of how community-level design can improve energy efficiency, save costs for the developer, and encourage him to improve building-level energy efficiency. Community-level decisions regarding land use are often made during the preparation of subdivision plans that can have important impacts on energy use. Our work on LEAP for SCE and SCG has shown that there is a number of community-level design approaches that improve energy efficiency that can be accomplished at *cost savings* to the developers. Some simple, and low-cost or no-cost, measures, such as north-south building orientation and tree shading can provide obvious heating and cooling benefits. Other less obvious ingredients, including narrower streets and tree canopies, can also reduce the energy consumed by a community and save developers money as well.

An important factor in getting developers (and planning agencies) to consider greater energy efficiency in proposed subdivisions and communities is to have a tool that can demonstrate quantitatively the financial and environmental benefits of energy efficiency improvements. Indeed, many of the decisions about factors affecting energy use in residential developments are made at an early design stage, but the economics of the industry have not given developers or planners incentives to expend time and money in exploring energy efficiency alternatives. Consequently, a tool is needed for local energy planning that is easy-to-use and low cost. Procedures and software for community energy assessment are needed that allow analysis of modifications to the design of a residential development at both the community level and at the building level that can satisfy the objective of improving energy efficiency in a cost-effective manner.

We have developed this software tool in our LEAP work. *LEAP-1* had the capability to allow analysis of the following types:

- Analysis of community-level modifications that improve energy efficiency, examples of which may include (1) reducing the width of some streets in the development; (2) increasing the number of street trees planted; or (3) modifying the amount of street lighting.
- Analysis of the energy savings and costs to implement various packages of energy efficiency measures that could be installed at houses or buildings in the development to improve the energy efficiency at least 10% beyond that required by building energy efficiency standards.

We have subsequently updated *LEAP-1* to reflect the new Title 24 standards that came into effect in 2001 under the mandate of AB 970. Thus, *LEAP-1* is an

established tool that we can use in working with a developer to examine subdivision design alternatives that improve energy efficiency.

With the various forms of assistance that we provide to them through the Green Community Design Assistance Program, developers can better work with local planning departments to incorporate energy efficiency measures in their proposed developments. Our design of the Green Community Design Assistance Program explicitly recognizes that the incorporation of energy efficiency into new residential housing begins not with the design of the houses or buildings but with planning and land use considerations when a developer first submits his/her plan for a project to the city/county planning department for approval. Moreover, it is at this stage that community-level and building-level energy efficiency alternatives that are specific to the particular subdivision or development plan can be most easily examined and encouraged.

2.2 PROGRAM IMPLEMENTATION

The work effort associated with our proposed Green Community Design Assistance Program is divided among three (3) tasks.

- Task 1 is to recruit developers to participate in the Program.
- Task 2 is to provide developer-specific technical “green design” assistance.
- Task 3 is to prepare a report at the end of the program that documents the work performed and the energy savings and performance milestones achieved.

The activities in each task are described in the following discussion.

2.2.1 Task 1: Recruit Developers to Participate in Program

As Task 1, we recruit developers/builders of new housing subdivisions in the service territories of SCE and SoCalGas to participate in the program.

We focus our recruiting efforts on several high visibility developers who are recognized as leaders in their markets. We have already discussed this proposed program with some developers and have received expressions of interest from a number of them. During the program, we make personal visits to the representatives of these firms to make an on-site presentation of the program. The presentation includes a discussion of the background for the program, why it is being implemented, what the goals of the program are, its structure, who is involved, what that particular developer/builder can expect to get out of it, and what is expected of the developer/builder if he/she participates.

2.2.2 Task 2: Provide Developer-Specific Assistance Package

As Task 2, we work with each participating developer to provide the particular assistance that will best enable that developer to install energy-efficiency measures in new houses he/she builds not only during PY 2002 and PY 2003 but in future years as well. Because developers build numerous houses, they have influence in affecting energy use in numerous new houses. However, each developer has particular goals and constraints, and assistance particular to a developer is therefore determined.

We establish a 'model' or prototypical energy efficiency package with an initial budget allocation for each developer/builder. Elements of this package involve providing energy efficiency planning/design services and evaluating the installing of building upgrades that improve energy efficiency. We sit down with each developer/builder and craft an energy efficiency program specifically tailored to that developer/builder's business plan that is intended to maximize the amount of immediate energy savings while not neglecting the near or long term energy savings associated with plans in the development pipeline that will begin construction. Such a case might involve a tentative tract map where roadway sections or streetlight placements are reduced through our efforts and construction begins this year and associated savings are calculated and realized. Essentially we try to establish a balance between the free services that we will provide for the design assistance and the number of homes that will receive solar screens.

Several example projects are provided as attachments to illustrate the kinds of energy efficiency improvements in new housing developments that can be realized by working with developers on a one-to-one basis as they prepare their plans for new developments. These examples include the following:

- Lin property, in Kern Count
- Parkside Estates, in Huntington Beach
- Wolf Creek Specific Plan, in Temecula
- Tentative Tract Map No. 53299, in Lancaster

During this task, we monitor the progress of the program to ensure that performance milestones for the program are being met.

2.2.3 Task 3: Prepare Report on Program Milestones

As Task 3, we prepare a report that documents the work on the program and the milestones achieved. In this report, we report statistics on the numbers of houses where different energy efficiency measures have been installed by developers participating in the program. We also report actions taken by local governments

on development plans (e.g., specific plans, tentative maps, etc.) when assistance we provided made a new development more energy efficient. Actions will be quantified in terms of savings for current and future years.

3. CUSTOMER ELIGIBILITY

The Green Community Design Assistance Program is targeted at developers of new housing tracts in the service territories of Southern California Edison and Southern California Gas. We particularly target developers working in the communities identified in Figure 3-1. These are the communities with which we worked through LEAP and are therefore already responsive to “green design” concepts for new housing subdivisions.

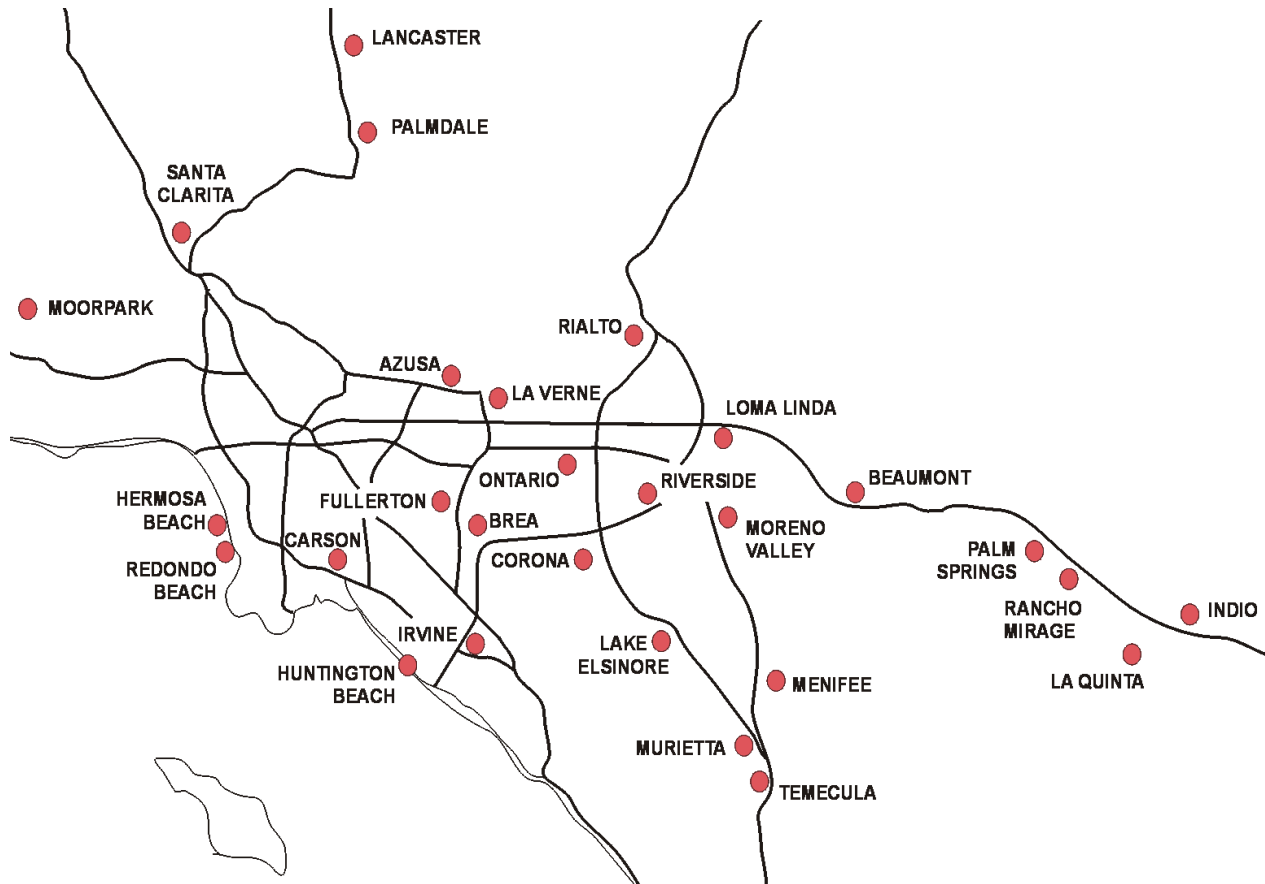


Figure 3-1. Communities Representing Target Areas for Green Community Design Assistance Program

4. COST-EFFECTIVENESS CALCULATIONS

We have used the cost-effectiveness spreadsheet provided by the CPUC to calculate the cost-effectiveness of the Green Community Design Assistance Program. The summary results from these calculations are reported in Table 4-1.

*Table 4-1. Summary Results of Cost-Effectiveness Calculations
for Green Community Design Assistance Program*

Test	Costs	Benefits	Ratio	Net Benefits
TRC test	\$255,040	\$1,192,920	4.677	\$ 937,880
Participant test	\$216,000	\$1,707,150	7.903	\$1,491,150

The energy savings associated with the community design features are provided in Table 4-2. These values are based on extensive analysis that has been performed for 40 communities for which ADM has conducted recommendations in Southern California, under the LEAP project. The values also reflect the recent change in Title-24 standards (AB 970) as the baseline for the evaluations.

*Table 4-2. Energy Savings Associated with Community Design Features**

Recommendations	Impacts	Climate Region	
		South Interior	Desert
Street Width Reductions	A/C Load Reduction	91	195
Addition of Tree Canopy	A/C Load Reduction	82	230
Optimize Lot Orientation	A/C Load Reduction	180	267
Optimize Street Lighting	Lighting Load Reduction	83	83
Average Savings		436	775

*Combined Savings by Climate Region from “Green” Community Design Package.

Assumes street width reduction from 44 to 36 feet and lot orientation change from 50% to 100% N/S and tree canopy coverage change from 0% to 75%.

Based on “Total Community Super Credit Project: Final Report”, Prepared by ADM Associates for Southern California Gas Company, December 2001.

Table 4-3 presents the kW and kWh savings for communities for the South Interior and Desert climate regions of southern California. The numbers of houses per subdivision represent conservative estimates. As shown in Table 7-2 in Section 7, the subdivisions for which we provided technical design assistance through LEAP had an average of about 780 houses per subdivision.

*Table 4-3. Expected Energy Savings per Community
 from “Green Community Design”*

	<i>Climate Region</i>	
	<i>South Interior</i>	<i>Desert</i>
Average number of houses per subdivision	400	250
Savings kWh per house per year	436	775
Savings kW per house	1.1	1.2
Total Annual Savings kWh	174,200	193,625
Total Savings, kW	440	300

The total expected savings for the proposed program are presented in Table 4-4. The cost-effectiveness tests are based on the savings inputs shown in this table.

Table 4-4. Energy Savings For The Program

	<i>Climate Region</i>		<i>Total</i>
	<i>South Interior</i>	<i>Desert</i>	
Number of Communities	10	2	12
kWh Savings per Community	174,200	193,625	
kW Savings per Community	440	300	
Total kW Savings	4,400	600	5,000
Total Annual kWh Savings	1,742,000	387,250	2,129,250

5. PROGRAM PERFORMANCE GOALS

The overall program performance goal for the Green Community Design Assistance Program is to deliver direct energy efficiency technical assistance to developers for preparing 12 new subdivision plans during PY 2002 and PY 2003.

6. EVALUATION, MEASUREMENT AND VERIFICATION PLANS

This section discusses our approach to performing the evaluation, measurement and verification work for the Green Community Design Assistance Program and to reporting on program progress.

6.1 APPROACH TO EVALUATION, MEASUREMENT AND VERIFICATION

As part of the implementation plan that we prepare for the Green Community Design Assistance Program, we prepare a plan for measuring and evaluating the program's effects, including the savings that result. Our preliminary outline of that plan is presented here. A more detailed plan would be prepared for the implementation plan.

At the end of the program, we use the data in the tracking system (discussed in Section 6.2) to prepare an evaluation of the program's effects. In this evaluation we document the work on the program and the milestones achieved. We report statistics on the numbers of houses where different energy efficiency measures have been installed by developers participating in the program.

We also evaluate the energy impacts of actions taken by developers and local governments on development plans (e.g., specific plans, tentative maps, etc.) when assistance we provided made a new development more energy efficient. Actions will be quantified in terms of savings for current and future years using the process depicted in Figure 6-1.

6.2 REPORTING REQUIREMENTS

Although we have procedures in place for implementing the Green Community Design Assistance Program, we do need to coordinate our work with that of the utilities and other parties who have programs that may also involve improving energy efficiency at small hotels/motels. Accordingly, we prepare an implementation plan at the start of the program that specifies the process and procedures that we will be using to implement the program and to coordinate our work with that of others. We submit this plan to the CPUC and the CPUC-designated contract manager for review and approval.

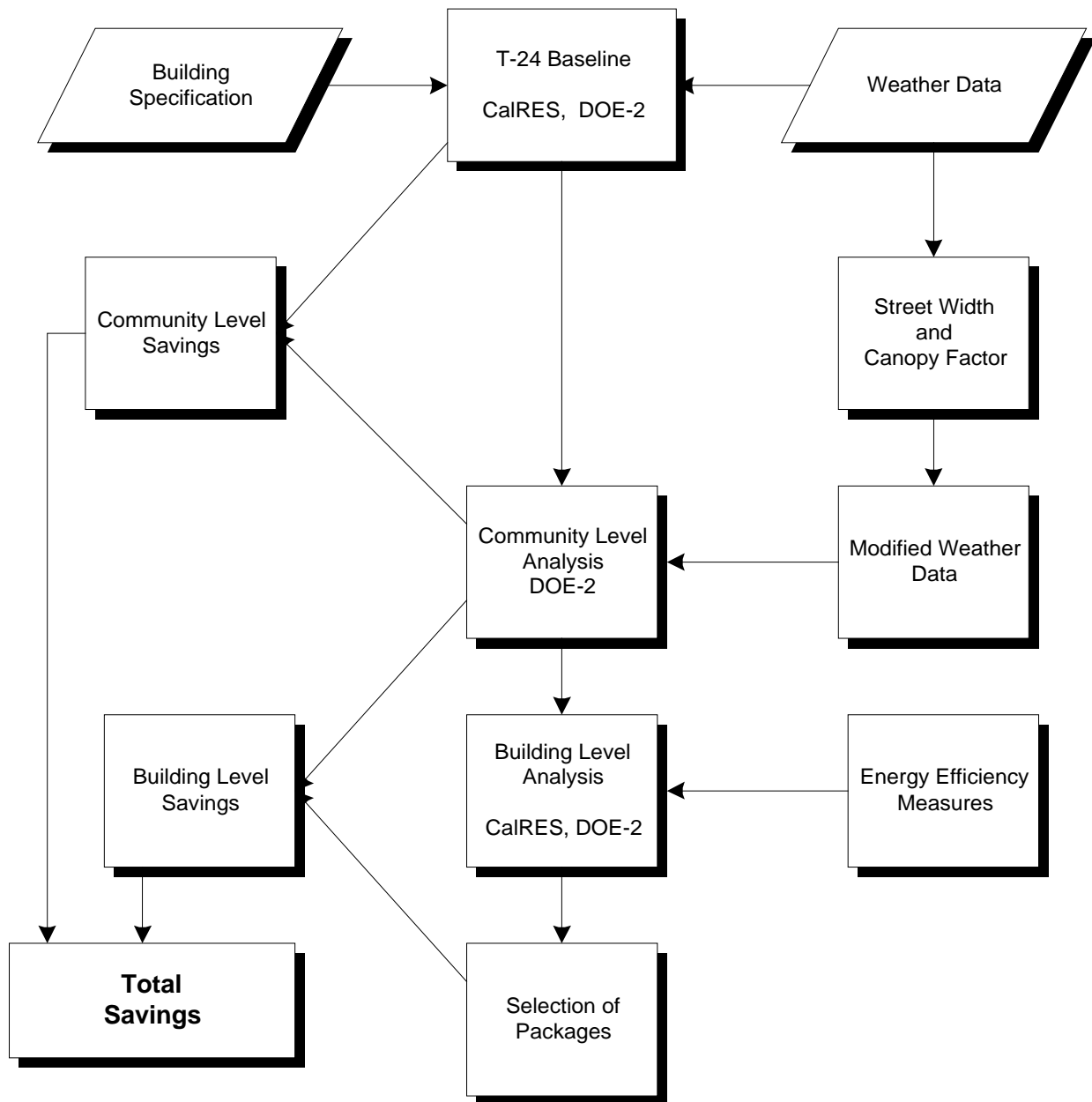


Figure 6-1. Overview of Approach to Evaluating Energy Savings of "Green Community" Designs

From our work in implementing and evaluating other energy efficiency programs, we know the importance of having good information in a program tracking system in order to track the progress of the program and to evaluate its effects. For the Green Community Design Assistance Program, we already have in place the system for tracking the work that we developed for the Local Energy Assistance Program that we conducted for SCE and SoCalGas. This tracking system is a full system that includes procedures, policies, protocols, forms, data entry and the data storage methods. The system is up and running and will require little modification to tailor it to meet the data collection and reporting requirements involved in our implementing the Green Community Design Assistance Program.

We use the system to track specific types of information that enable us to evaluate the progress of the program and our efforts. The information that we track includes the following:

- Name and address of each developer receiving assistance;
- Basic characteristics of developments for which energy efficiency assistance was provided (e.g., location, number and types of housing units, characteristics of units); and
- Energy efficiency measures recommended for the developments.

During the course of the program, we use the tracking system to prepare quarterly reports that detail the previous quarter's activities and progress towards meeting the goals of the program. Each quarterly report includes information on the number of hotels/motels contacted, their characteristics and locations.

7. DESCRIPTION OF ADM'S QUALIFICATIONS

This section provides information on the qualifications of ADM Associates and of the personnel who will be the staff for the Green Community Design Assistance Program.

7.1 ADM'S QUALIFICATIONS

Our ability to implement the Green Community Design Assistance Program is based on our considerable experience in working with small business firms to improve energy efficiency. Since beginning business in 1979, ADM Associates, Inc. has worked with utilities throughout the country to implement large-scale programs to help small commercial firms use energy more efficiently.

The Green Community Design Assistance Program that we are here proposing builds on the Local Energy Assistance Program (LEAP) that ADM implemented for Southern California Edison Company and Southern California Gas Company between 1998 and 2001. Through LEAP, we provided assistance to the planning departments in selected communities to encourage energy efficiency in new residential developments that were being proposed in those communities. This program included directly influencing specific development plans and providing assistance to the planning departments of the local governments to plan/approve planning and zoning areas, based on energy use as well as other infrastructure criteria presently used. We also disseminated information regarding the results of these energy planning activities to other communities.

Through LEAP, we provided assistance to communities throughout southern California that had expressed interest in using their planning process to encourage energy efficiency and that had been identified as having current or tentative specific plans that were in stages that allow them to be influenced. Cities with which ADM worked through LEAP are identified in Table 7-1.

*Table 7-1. Southern California Cities/Counties
ADM Worked with through LEAP*

American Canyon	Huntington Beach	Moreno Valley
Azusa	Irvine	Murrietta
Beaumont	Lake Elsinore	Rancho Mirage
Brea	LaVerne	Reedley
Carson	La Quinta	San Jose
Escalon	Lincoln	Santa Clarita
Fullerton	Lindsay	Taft
Gardena	Moorpark	Temecula

Examples of the subdivision plans for which we provided technical design assistance through LEAP and the number of houses in these subdivisions are shown in Table 7-2.

*Table 7-2. Subdivision Plans for Which ADM
 Provided Technical Assistance through LEAP*

<i>Climate Region</i>	<i>Project Name & City</i>	<i>Number of Houses</i>
South Interior	Oak Valley Estates SP, Beaumont	2,347
South Interior	Lytle Creek North SP, San Bernadino	2,406
South Interior	Birch Hills SP, Brea	106
South Interior	Moreno Valley	37
South Interior	The Vineyard, Murrieta	1,117
South Interior	Lavern	30
South Interior	North Park II, Irvine	1,632
South Interior	Amerige Heights SP, Fullerton	1,250
South Interior	Tentative tract 29617, Corona	56
South Interior	Tentative tract 16045, Ontario	189
South Interior	Riverside #1-French Valley	2,092
South Interior	Riverside #2 - Sun City	427
South Interior	Loma Linda #1	60
South Interior	Lancaster	347
South Interior	Delano	731
South Interior	Palmdale	158
Desert	Tentative tract 28940, Rancho Mirage	254
	Average number of houses per subdivision	779

From our work on LEAP, we have considerable experience in working with developers and builders to improve energy efficiency in new subdivisions and in new houses being built in those subdivisions. We are well aware of the concerns and interests of developers and builders and of local government agencies and of the factors that they consider most important when they think about energy efficiency for new housing.

ADM's qualifications are based more generally on long experience in working to implement programs to improve energy efficiency in residential, commercial, and industrial facilities. Examples of this work include the following:

- **Mobile Energy Clinic**

For: Southern California Gas Company

The Mobile Energy Clinic and Diagnostic Services Program is a program that ADM implemented for SoCalGas that is focused on improving energy efficiency for small businesses by making no-cost/low-cost improvements for energy efficiency and by providing diagnostics of energy-using equipment for small businesses. Small businesses that participate in this program have actual no-cost/low-cost improvements made to their equipment. They also have their HVAC performance tested, condensor coils cleaned, filters changed, lighting systems evaluated, and other energy using equipment such as water heaters, compressors and process equipment checked for proper use. Owners/managers are given a checklist of other energy efficiency actions that they can take.

- **Upstream High-Efficiency Gas Water Heater Program**

For: Southern California Gas Company

Since 1999, ADM has been under contract to SoCalGas to implement an upstream high efficiency gas water heater program. The purpose of this program is to increase the sales of higher efficiency gas water heaters by working with manufacturers, wholesaler/distributors, water heater dealers, and plumbing contractors throughout SoCalGas's service territory. Our work includes meeting with the market actors, preparing point-of-purchase materials for retailers, and providing incentives.

- **Beverage Vending Machine Program**

For: Southern California Edison Company

Under contract with SCE, we implemented an Energy Savings Program for Beverage Vending Machines. We installed VendingMisers™ or time clocks (as appropriate) on 3,400 vending machines in SCE's service territory. The control strategies were defined by (1) whether the vending machine is lighted and (2) whether the location of the machine will permit use of a time clock or requires use of a VendingMiser™. Most of these savings will go to small commercial customers, who are a particular target for the program.

- **Duct Efficiency Programs**

For: Pacific Gas and Electric
Southern California Edison
Southern California Gas
San Diego Gas and Electric

Under the California Board for Energy Efficiency's third party program, ADM was under contract with the four major investor-owned utilities in California (i.e., Pacific Gas and Electric, Southern California Edison, San Diego Gas and Electric, and Southern California Gas) to implement residential duct efficiency programs throughout California. The Duct Efficiency Programs were aimed at institutionalizing good duct design and establishing retrofit duct repair as a component of HVAC maintenance. Through the Duct Efficiency Program, we provided HVAC and/or sheet metal contractors with the information, procedures, and technologies that they could use to market duct leakage inspection and repair services to residential single-family and multi-family houses. Through the program, contractors were educated and trained on how to provide duct inspection and repair services as a viable business venture. Contractors were taught new techniques and procedures that were explicitly designed under this program in order to be effective and not too expensive. Contractors who participated in the programs were also assisted in identifying households who are interested in having their duct system inspected and repaired.

- **RCP Training**

For: Southern California Gas
Southern California Edison

ADM conducted training workshops to provide training to HVAC contractors to better equip them to participate in the Residential Contractors' Program. One aspect of the training was to provide training in central air conditioner/central heat pump diagnostic tune-up, duct testing and duct sealing in conjunction with SCE/SoCalGas Installation Standards. The other aspect was to provide an overview of the RCP fulfillment process from consideration of installation of energy efficiency measures through completion of work and contractor payment. This overview included proper completion of program-related paperwork, including Incentive Voucher/Application and Customer Information and Declaration forms.

- **Impact Evaluation of New York State Energy Star Program**

For: Long Island Lighting Company

This project had a twofold purpose. One purpose was to conduct an impact evaluation of the NYSE-STAR component of LILCO's Residential New Construction Program. This involved conducting a telephone survey of about 300 residential customers and collecting detailed data on-site for 18 houses that could be used in computerized building energy analysis of the houses. The other purpose was to perform an evaluation of gas energy conservation measures in existing single family homes. This evaluation was conducted on 5 houses that receive service from LILCO for residential space heating. These houses were weatherized and had blower door tests performed on them. Energy impacts of gas energy conservation measures were quantified through building energy simulation modeling.

- **Measurement and Verification Analysis Analysis**

For: Central Power and Light

For CPL, ADM performed a study to measure and verify the savings realized by customers participating in several DSM programs that CPL has been offering to its residential, commercial and industrial customers. The residential DSM programs for which evaluations were performed include the Residential High Efficiency Air Conditioning Program; the Good Cents New Home Program; and the Good Cents Home Improvement Program; and the Low-Income Program. The C/I programs for which evaluations were performed include the Commercial & Industrial Efficiency Program and the Thermal Energy Storage Program. We collected data on-site for samples of customers participating in these programs and used billing analysis, engineering analysis, and monitoring to measure and verify the savings these customers have realized from measures that they have installed under the programs.

- **Residential Energy Conservation Analysis**

For: Northwest Natural Gas Company

For this study, ADM audited nearly 1,000 homes in Oregon. This work provided data for analysis with an engineering model, estimation of conservation technical potential, conditional demand analysis including parameters from the engineering model, calibration and modification of the engineering model and adaptation of the results for energy forecasting and conservation evaluation.

- **Residential Market Assessment Project**

For: Northern States Power

For Northern States Power, we were part of the team that conducted a residential market assessment project. Our role was to conduct on-site data collection for 600 residential customers, including 50 multifamily facilities. We were responsible for preparing the data collection instrument, for recruiting the customers for the survey, for editing and verifying the data, and for preparing a survey data base.

- **Residential On-Site Survey**

For: Southern Company Services

For Southern Company Services, ADM conducted an on-site survey to collect detailed data on the dwelling characteristics and appliance holdings of about 500 residential load research customers served by Georgia Power Company. We collected data pertaining to residential customers' building characteristics, appliance saturation levels, household characteristics and lifestyles.

- **Residential Appliance Saturation Survey**

For: Sacramento Municipal Utility District

ADM conducted SMUD's 1989 Residential Appliance Saturation Study, using the sample design and sample selection procedures that we developed for SMUD's residential appliance saturation surveys in 1983 and 1985. These procedures are based on those we previously developed for the California Energy Commission for conducting end-use surveys to assess the market saturation of appliances and other energy using devices. We were responsible for all aspects of the 1989 survey, including sample design, sample selection, questionnaire preparation, and data analysis. The response rate for the 1989 survey is 69.1% (60.2% from the mail survey and 8.9% from telephone follow-ups to a subsample of nonrespondents.)

- **Residential Low-Income Weatherization Study**

For: Southern California Edison Company

For Southern California Edison Company, we conducted a Residential Low-Income Weatherization Study. In this study, we (1) estimated the size of the population of low-income households with electric space heating and/or electric water heating, (2) determined the levels to which the low income customers' dwellings are presently weatherized, and (3) verified the accuracy and completeness of Edison's Customer Information System database in correctly identifying customers with electric space and/or water heating. We collected the data for this study through a combination of telephone

interviewing (of about 1,360 residences) and on-site interviewing and inspection (of about 740 residences).

- **Impact Evaluation of New York State Energy Star Program**

For: Long Island Lighting Company

This project had a twofold purpose. One purpose was to conduct an impact evaluation of the NYSE-STAR component of LILCO's Residential New Construction Program. This involved conducting a telephone survey of about 300 residential customers and collecting detailed data on-site for 18 houses that could be used in computerized building energy analysis of the houses. The other purpose was to perform an evaluation of gas energy conservation measures in existing single family homes. This evaluation was conducted on 5 houses that receive service from LILCO for residential space heating. These houses were weatherized and had blower door tests performed on them. Energy impacts of gas energy conservation measures were quantified through building energy simulation modeling.

- **Monitoring of Central Air Conditioning in Residential Houses**

For: Los Angeles Department of Water and Power

For LADWP, ADM is conducting a monitoring study of central air conditioning electricity use in residential houses. We have installed monitoring equipment on the central air conditioners of 75 residences and are collecting data on the electricity use of this equipment.

- **Fresno Air Conditioner Study**

For: Pacific Gas and Electric Company

For PG&E, we conducted a study of an air conditioner repair program being operated by PG&E in the Fresno area. Telephone interviews were conducted with 350 PG&E customers in the Fresno area to determine their attitudes toward the program and toward PG&E. The study was conducted in two waves. In the pre-wave, telephone interviews were conducted with 200 PG&E customers, divided equally between participants and non-participants in the air conditioner study. In the post-wave, telephone interviews were conducted with 150 participants, using a modified version of the questionnaire used for the pre-wave interviews.

- **1991 and 1992 New Homes Surveys**

For: Pacific Gas and Electric Company

For PG&E, ADM has conducted two separate surveys to collect detailed information on new homes built in PG&E's service territory. We have been

responsible for preparing the survey questionnaire, for selecting the sample, for conducting the telephone interviews, for preparing a database with the responses, for analyzing the data, and for preparing a report on the results. For the 1991 survey, we completed telephone interviews with 400 customers. For the 1992 survey, we conducted a mail survey of approximately 1,000 customers.

- **Compliance Options Survey**

For: California Energy Commission

ADM conducted a telephone survey of a sample of households throughout California to obtain information on the measures and practices being used to comply with California's residential building energy efficiency standards. Information was obtained about the use of air conditioning, natural ventilation, window shading, ceiling fans, whole house fans, evaporative coolers, and heat pump water heaters. This information was used in improving the CEC's procedures for including new calculation methods and energy conservation approaches in the energy efficiency standards.

- **Residential Building Standards Confidence and Sensitivity Analysis Study**

For: California Energy Commission

ADM was part of the team conducting this study of the residential building standards for the CEC. For this study, we conducted a number of mail and telephone surveys. First, we selected and surveyed a sample of building departments throughout California to obtain information about the methods being used in their jurisdictions to comply with the building standards. We also collected information from building departments on the characteristics of new houses being built. Second, we conducted a survey of homebuilders throughout the state to determine the energy efficiency measures they are installing in new houses they build and to determine the reasons why such measures were or were not installed.

7.2 KEY PERSONNEL

This program requires expertise in market analysis and program design and implementation. Our team for this program provides these required capabilities.

- The principal point of contact between the CPUC's designated Contract Manager and the project team is ADM's project manager, Mr. Taghi Alereza. Mr. Alereza will provide overall technical leadership and will ensure that excellent staff support will be available to the project. He will direct the

program design efforts and will be responsible for liaison with the Contract Manager.

- Market analysis and research and measurement and evaluation activities will be directed by Dr. Donald Dohrmann, who is director of economic studies at ADM.

Short biographical sketches for these and other key personnel for the project are provided in the following paragraphs. Full resumes are provided in Section 10, Attachments.

Taghi Alereza, P.E., who is President of ADM, will serve as the day-to-day project manager. Mr. Alereza is a nationally recognized expert in building energy simulation and modeling. He has pioneered the development of several state-of-the-art simulation procedures and models. Mr. Alereza has led ADM's effort to develop and implement two statewide residential programs during the 1998 program year. He conceived and developed the "Residential Duct Efficiency Program," which was implemented in the service territories of Pacific Gas and Electric, Southern California Edison, Southern California Gas and San Diego Gas and Electric. Mr. Alereza also conceived the Local Energy Assistance Program (LEAP), which was implemented in the PG&E, SCE and SCG service areas. This program provided extensive training to developer/builders, local government staff and elected officials. He has directed program design and implementation including

- "Upstream High Efficiency Residential Water Heater Program" - implemented for Southern California Gas Co.
- "Refrigerated Vending Machine Cycling Program" - designed and implemented for Southern California Edison Co.
- "Performance Assurance Project" - designed and implemented simplified building commissioning project for Southern California Edison Co. and San Diego Gas and Electric Co.
- "Mobile Energy Clinic" – designed and implemented for Southern California Gas Co.
- "Lodging Industry Education And Audit Program" – designed and implemented for Southern California Gas Co.

Mr. Alereza holds a Bachelor of Mechanical Engineering degree from Auburn University and has completed an MS and the coursework for D.Sc. in mechanical engineering from the George Washington University. He is a member and past chairman of ASHRAE Technical Committee 9.6 (Energy Utilization), which is responsible for developing and applying protocols for assessing energy use in

buildings, and the cognizant TC for the ASHRAE Standard 90.2. He is a registered professional engineer in California.

Dr. Donald Dohrmann is a Principal of ADM Associates and Director of Economic Studies. He will be responsible for market analysis and measurement, evaluation, and verification for the program. Dr. Dohrmann has technical expertise in economics, survey design, and statistical analysis. He has developed and applied analytical methodologies for evaluating DSM programs, including evaluations of Portland General Electric's commercial new construction programs, Northern States Power's high efficiency motors and adjustable speed drives programs, Pacific Gas and Electric's Commercial New Construction Program and its Nonresidential Energy Management Services Programs. He has been responsible for designing the statistical sampling plans for surveys of residential, commercial and industrial firms that ADM has conducted for various companies, including Pacific Gas and Electric Company, Southern California Edison Company, the Bonneville Power Administration, Florida Power and Light, B.C. Hydro, Kansas City Power and Light, El Paso Electric, Southern California Edison Co., the Sacramento Municipal Utility District, San Diego Gas and Electric Co., and many other utilities. He has also been responsible for preparing and conducting the analysis of the data collected in these surveys. Dr. Dohrmann received his B. S. in economics from Iowa State University and his M. A. and Ph. D. in economics from Yale University.

Robert Johnson is a senior consultant at Stantech, and provides consulting and planning services to ADM Associates. He has over 22 years of experience in planning and design with a particular expertise in project management, entitlements, environmental planning, community development, resorts and entertainment based venues. Mr. Johnson takes the primary role at ADM on all projects involving the political and technical components of land development. Recently, Mr. Johnson lead the planning / engineering team for ADM on all projects associated with the Local Energy Assistance Program (LEAP), a third party initiative program intended to foster energy efficiency in new development. Through LEAP, new development proposals submitted to cities and counties were reviewed at both the community-level (orientation, street standards, streetscape standards, etc.) and building- level (both heating and cooling equipment) to identify methods that could be used to increase energy efficiency and livability. Identified energy efficiency measures at the building-level were paid for through community-level project modifications. Mr. Johnson has directed LEAP efforts associated with projects in Huntington Beach, Temecula, Reedley, San Bernardino County, Rancho Mirage, Brea, Irvine, Moreno Valley, La Quinta, Ontario, Riverside, Kern County and Murrieta, among others. LEAP related services for projects in Southern California and the Central Valley in 1999 affected over

17,000 new dwelling units on over 4,100 acres. Mr. Johnson has also provided planning and design assistance to a variety of public sector clients involving the preparation of general plans, specific plans, local coastal plans, environmental assessments and EIS/EIRs, among others. Most of these efforts involved an extensive public outreach program involving citizen advisory committees and public workshops as well as newsletters, videos and other information dissemination techniques. Mr. Johnson holds a B.S. in Environmental Planning / Architecture from the University of California at Davis and a Master of Architecture degree from the University of Pennsylvania.

Richard Ely, Ph.D., is a Program Manager and Senior Economist/Engineer at ADM with responsibilities for energy analysis, program evaluation, and energy modeling. Dr. Ely will serve as the day-to-day project manager for this proposed program. He was a project director for an Upstream High Efficiency Water Heater program conducted for Southern California Gas Co. In this project, ADM promoted and provided incentives for over 77,000 high efficiency water heaters. Dr. Ely was responsible for coordination of the availability of water heaters with manufacturers and distributors. He also conducted focus groups with manufacturers, distributors and plumbing contractors to identify ways to increase the sales of high efficiency water heaters. Dr. Ely participated in recruiting participants for the LEAP project conducted for SCE and SCG. He has made presentations to local governments to promote the LEAP process. He has worked on electricity demand and rate analyses for the New England Energy Policy Staff, the New England Regional Commission, the New England Energy Policy Center, and several environmental organizations and has been a staff member of the Rhode Island Public Utilities Commission. Dr. Ely received a B.S. from Massachusetts Institute of Technology, a M.S. in engineering from the University of California, Berkeley, a M.S. in Resource Economics from the University of Rhode Island, and a M.A. in economics and a Ph.D. in Resource Economics from the University of Connecticut.

Dr. Safdar Chaudhry is a Senior Engineer at ADM Associates, Inc. While at ADM, Dr. Chaudhry has performed engineering analysis and evaluations for several residential, commercial and industrial facilities conducted for several utilities including PGE, SMUD, SCE and B.C. Hydro. He conducted on-site inspections, analysis, energy conservation recommendations and report preparation in most of these projects, and has been responsible for organizing and managing several other energy efficiency improvement projects. He developed energy conservation evaluation procedures, monitored field staff, and reviewed recommended energy measures for the Mobile Energy Clinic program conducted for Southern California Gas Company. He also developed energy auditing and measure evaluation procedures conducted for the Lodging Industry Education

Program conducted for SCG. Dr. Chaudhry has been responsible for hundreds of building energy simulations using DOE-2, CALRES and other computer simulation programs. Dr. Chaudhry has a Ph.D. in Mechanical Engineering from the University of Birmingham, a M.S. in Mechanical Engineering from George Washington University and a B.S. in Mechanical Engineering from the University of Engineering and Technology in Pakistan.

Dr. Sabaratnam Thamilsaran is a Senior Mechanical Engineer with ADM Associates, Inc. Dr. Thamilsaran's responsibilities include energy auditing and analysis, DOE-2 simulation and analysis of energy use, assessing energy savings and writing technical reports for industrial and commercial buildings. He was responsible for the development of energy auditing and measure evaluation procedures conducted for the Lodging Industry Education Program conducted for SCG. Under this project he also conducted staff training, reviewed audit reports, and developed the database for program evaluation. Dr. Thamilsaran has extensive experience in energy simulation, modeling and analysis of residential and commercial buildings, using both CALRES and DOE-2. He has also been involved in conducting audits and technical evaluations of energy conservation opportunities, building HVAC simulations and baseline model development for commercial buildings for El Paso Electric, Portland General Electric and Southern California Edison. As a participant in the Texas state funded LoanSTAR program, he performed energy efficiency evaluations and the commissioning of energy conservation measures. Examples of specific projects that he has participated in include:

- Performed DOE-2 simulations of non-residential buildings for the Energy Audits project conducted for El Paso Electric Co.
- Performed DOE-2 simulations of commercial buildings for the evaluation project conducted for Northeast Utilities.
- Conducted on-site surveys and performed DOE-2 simulations of commercial buildings for the New Construction Program evaluation conducted for Portland General Electric Co.

Dr. Thamilsaran earned his Ph.D. in Mechanical Engineering, specializing in Thermal Sciences and Energy Management, from Texas A&M University. He earned his MEng from the Asian Institute of Technology in Thailand, and a B.S. in Mechanical Engineering from the University of Peradeniya in Sri Lanka.

Lillie Mozaffari is a Senior Engineer at ADM. Her technical qualifications are in architectural and structural engineering, and she has an established track record for technical and management performance. She has extensive experience in developing and applying building energy efficiency and structural codes.

Previously, Ms. Mozaffari was a staff engineer at Skidmore, Owings, and Merrill, where she was responsible for the analysis, design, and field construction inspection of several high-rise office building projects. She has also been supervisor of commercial building plan checking for the County of Sacramento. Ms. Mozaffari received her B.S. and M.S. in architectural engineering from Oklahoma State University and her M.S. in structural engineering from the University of California, Berkeley.

Richard Burkhart serves as the Senior Technical Editor and desktop publisher at ADM Associates, Inc. As technical editor, his responsibilities include copy-editing, graphic design and production for documentation, marketing materials, survey questionnaires, and web page layout and design for ADM projects. He is responsible for the production of a quarterly newsletter and accompanying website for the Southern California Gas Co. *Lodging Industry Education Program*. He was in charge of designing and publishing marketing materials for the Duct Efficiency Training Program, Upstream High-Efficiency Gas Water Heater program and several other energy efficiency marketing programs performed for California utilities. He was responsible for the production of a series of Commercial / Industrial site audit reports for Entergy Services, Inc. For Kansas City Power and Light Co. he developed automated templates using the data linking functions in Microsoft Word and Excel to generate site reports, and was responsible for final copyediting and cleanup of the reports. He has also performed similar work for projects for Southern California Edison Co. He is well versed in the advanced techniques for a wide variety of production software packages and web page design software, under multiple operating systems. Prior to joining ADM, he worked as a freelance editing assistant, performing editing, graphic production and page layout for a series of operating manuals for computerized production equipment. Mr. Burkhart earned his B.A. degree in Communications from California State University, Fullerton.

8. TIMELINE FOR PROGRAM IMPLEMENTATION

Our proposed timeline for implementing the Green Community Design Assistance Program is shown in Table 8-1.

Table 8-1. Timeline for Implementing Green Community Design Assistance Program

<i>Activity</i>	<i>Target Date</i>
Program Begins	5 Days After Contract Approval
Program Implementation Plan	3 Weeks After Project Start Date
Evaluation, Measurement & Verification Plan	5 Weeks After Contract Approval
First Quarter Report	3.5 Months After Contract Approval
Second Quarter Report	Quarterly
Third Quarter Report	Quarterly
Fourth Quarter Report	Quarterly
Fifth Quarter Report	Quarterly
Sixth Quarter Report	Quarterly
Program Completion	December 2003

9. PROGRAM COST PROPOSAL

Our cost proposal for the Green Community Design Assistance Program is detailed in Table 9-1.

Table 9-1. Budget Summary

Item	First Year Cost	Second Year Cost	Total Cost
Administrative Costs			
Labor	\$ 12,600.00	\$ 29,400.00	\$ 42,000.00
Benefits			\$ -
Overhead			\$ -
Travel costs	\$ 1,350.00	\$ 3,150.00	\$ 4,500.00
Reporting costs			\$ -
Materials & Handling	\$ 450.00	\$ 1,050.00	\$ 1,500.00
General and Administrative costs	\$ 1,440.00	\$ 3,360.00	\$ 4,800.00
Subcontractor costs (include same line items)			\$ -
IOU Administrative Fee (only for non-IOU programs)	\$ 4,032.00	\$ 9,408.00	\$ 13,440.00
Direct Implementation Costs			
Itemized (may be estimated)			
• Community Design Assistance - 12 Communities @ \$18,000/each	\$ 64,800.00	\$ 151,200.00	\$ 216,000.00
			\$ -
Evaluation, Measurement and Verification Costs			
Direct labor		\$ 16,000.00	\$ 16,000.00
Other direct costs	\$ -	\$ -	\$ -
Other Costs			
TOTAL BUDGET	\$ 84,672.00	\$ 213,568.00	\$ 298,240.00

Our proposed payment schedule is shown in Table 9-2.

Table 9-2. Proposed Payment Schedule

#	Event	% Payment
1	Acceptance Of Final Program Implementation Plan	25%
2	Acceptance Of Evaluation, Measurement And Verification Plan	10%
3	Acceptance Of Quarterly Reports (Payments To Be Determined Proportional To The Number Of Implementations Performed)	50%
4	Final Payment Based On Evaluation, Measurement And Verification Results	15%

10. ATTACHMENTS

Taghi Alereza
Principal & Director of Engineering

Mr. Alereza, a Principal of ADM Associates, Inc. and Director of the Engineering Division, is a recognized expert in energy analysis, energy modeling, energy forecasting, and system evaluation. He has been responsible for the development of several state-of-the-art contributions in the energy modeling field. These contributions have centered on energy analysis and energy forecasting for the residential, commercial, and industrial sectors. During his 25 years of professional experience, Mr. Alereza has successfully managed highly technical projects for over thirty major utility companies, the Department of Energy, California Energy Commission, and Electric Power Research Institute.

California Statewide Programs

Mr. Alereza has led ADM's effort to develop and implement two statewide residential programs during the 1998 program year. He conceived and developed the "Residential Duct Efficiency Program," which was implemented in the service territories of Pacific Gas and Electric, Southern California Edison, Southern California Gas and San Diego Gas and Electric. Mr. Alereza directed the development of the procedures for duct leakage tests and repairs, the training curriculum for HVAC contractors, marketing materials and program evaluation protocols. The Duct Repair program is being considered as an item with the most amount of incentives in the 1999 residential SPC program. Mr. Alereza also conceived the Local Energy Assistance Program (LEAP), which was implemented in the PG&E, SCE and SCG service areas. This program provided extensive training to developer/builders, local government staff and elected officials.

Program Evaluation

Mr. Alereza has managed several commercial, industrial and residential impact evaluations for Detroit Edison, Portland General Electric, Pacific Gas and Electric, Delmarva Power, BC Hydro, and Consumers Power Company. ADM designed the sample for participants and non-participants, collected the data, prepared baseline simulations of HVAC energy use, evaluated the energy impacts of the programs, and conducted all metering-related work, including installing, maintaining and removing metering equipment, collecting and verifying metered data on energy use and using these data to calibrate procedures for simulating such energy use.

Mr. Alereza has also managed various new construction evaluations for Pacific Gas and Electric, San Diego Gas and Electric, Southern California Edison Company and BC Hydro. ADM assessed the actual (realized) impact of several post-implementation program parameters, first-year annual energy savings, load shape impacts, net-to-gross and persistence impacts, incremental customer equipment and installation costs, and total customers' costs.

Pacific Gas and Electric's Commercial New Construction Program entailed an evaluation of realized savings for participant and non-participants using data on building equipment and characteristics; economic and attitudinal characteristics of the businesses involved; and billing and/or end-use metered data. In addition, monitoring equipment was installed in a subsample of the buildings to measure end-use electricity under "as operated" conditions.

ADM Associates provided analysis of the impacts of SDG&E, SCE and BC Hydro's energy efficiency programs. We conducted more than 300 high-resolution on-site surveys and correlated the results to billing data and local weather data. SDG&E and SCE's evaluations included additional parametric runs compared the energy use of the buildings under Title 24 conditions, as-built conditions and per incentivized measures. The data from the decision makers' survey was combined with the results of the DOE-2 parametric analysis to perform the overall net-to-gross analysis.

End Use Metering

Mr. Alereza has been the principal-in-charge on monitoring projects that collected data from more than 500 buildings in various locations.

He is currently managing Phase I and Phase II of an end-use metering project for Entergy Services Inc. ADM is performing this project to provide baseline end-use information for commercial buildings in Entergy's service area. We are installing monitoring equipment at 40 commercial buildings throughout Entergy's four-state service area and will be collecting end-use data from these buildings over the next year. End uses being monitored include space heating, air conditioning, and lighting, as well as end uses important in particular types of buildings (e.g., refrigeration in grocery stores).

As part of Pacific Gas & Electric Company's Collaborative Process program verification efforts, ADM conducted short-term monitoring of end uses in commercial and industrial buildings, both before and after conservation measure implementation. Data were analyzed to identify actual energy savings associated with each end use at each site and included in a comprehensive summary report prepared for each site. For Southern California Edison, ADM provided technical support for end-use metering of 50 commercial buildings. For San Diego Gas & Electric Company, ADM conducted its commercial end use and thermal storage monitoring project. We installed data acquisition systems at over 100 selected buildings with chillers and/or thermal storage systems in SDG&E's service territory. For all projects, ADM was responsible for recruiting the buildings for the program, preparing the meter installation plan, verifying the meter installation, and for validating the end-use data collected. Data validation is accomplished using our Load Profile Viewer, a custom-designed software program for reviewing and validating end-use load profile data. Installed equipment included current transformers, Btu meters, flow meters and temperature sensors.

He was responsible for the development of Data Analysis and Reporting System (DARS), a microcomputer software package that graphically displays metered end-use load data. DARS was developed as a coordinated set of SAS (Statistical Analysis System) programs that can extract end use load data from a mainframe data base and prepare the data for analysis and reporting. For simple reporting purposes, DARS can produce daily load profile plots, percent energy distribution pie charts, and energy distribution bar charts. For data analysis, DARS can produce load profile plots for various options, including individual site plots, plots for distributions across monitored sites, and plots for weighted averages across sites.

Industrial End-Use Data Analysis

Mr. Alereza managed two major industrial data collection and DSM evaluation projects for Bonneville Power Administration and Wisconsin Electric Power Company. The BPA project included development of a comprehensive database of available industrial DSM measures and their impact on industrial energy use by end-use. The WEPCO project included development of data collection procedures and collection of detailed industrial end-use inventory for 150 industrial facilities in Wisconsin. Also included in this project is a detailed analysis of end-use and process energy use and development of an industrial end-use analysis model.

Commercial Building End-Use Energy Data Collection and Analysis

For the past 15 years, Mr. Alereza has been responsible for data collection and analysis of several thousand commercial facilities throughout the United States. He has managed two major data collection and analysis projects on non-residential buildings for the Bonneville Power Administration. He has managed similar projects for many utilities including Pacific Gas & Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, Florida Power & Light, Alabama Power, Rochester Gas & Electric Company and Union Electric. He has also been responsible for the development of several analysis models being used by many researchers.

Simplified Calculation Method (SCM)

Mr. Alereza developed the Simplified Calculation Method (SCM) which is the commercial building energy standard compliance tool for the California Energy Commission. The concept used in SCM was based on the variable-based degree-day method which was originally developed by Mr. Alereza for the National Bureau of Standards. The SCM provides capabilities for analysis of daylighting, evaporative coolers, and solar water heaters.

Building Energy Use Determination

Mr. Alereza was the program manager on a program which resulted in the development of a methodology for determining energy use in residential and commercial buildings in the U.S. Army facilities. This methodology employs

non-computerized procedures and renders computer approach accuracy without the cost and the effort involved in the computer simulation. He was a major contributor to a program which evaluated the correlation between building component structure and energy consumption in new and old residential buildings in the Baltimore/Washington area in 1972. The analysis techniques and concepts developed in this program were expanded and served as a basis for a similar evaluation of single- and multi-family housing in 10 geographic regions of the United States. Mr. Alereza was the principal investigator on this program, and his responsibilities included the technical direction of tasks which defined typical buildings for each location, determined their energy consumption patterns, and evaluated the energy savings that could be achieved through selected structural modifications.

Building Infiltration Measurement and Modeling

Mr. Alereza had participated in several outdoor air infiltration and ventilation studies. He modified and extensively used the infiltration model developed by the National Research Council of Canada to develop a simplified hourly infiltration model. He also developed another air infiltration model which calculates the outside air infiltration into residential buildings as a function of the building characteristics, wind velocity, and indoor/outdoor temperature differential. The parameters for this model were evaluated by using SF6 Tracer gas decay rates in residences in Baltimore, Chicago, Denver, St. Louis, and Washington, D.C. Later, this model was used to assess the indoor air quality as a function of outdoor air quality and the air change rate.

Commercial Electricity Demand Forecasting

Mr. Alereza was the program manager and a key technical contributor for a project which resulted in the development of an electricity energy use and demand forecasting model for the California commercial sector. Also included in this project was an inventory of physical and energy use characteristics of existing buildings and end-use devices in the commercial sector. This inventory was obtained through three phases of data acquisition: a mail survey, an on-site inventory survey, and spot metering of end-use devices.

Energy Use Patterns Analysis

Mr. Alereza provided technical support in the development of a comprehensive methodology for analyzing energy use patterns for conservation potential at the community level, an evaluation of the impact of time-of-day price structures on commercial and industrial sectors, the development of a regional commercial sector energy forecasting model, evaluation of hot water energy use in hospitals, and an assessment of energy use and energy conservation potentials in public buildings.

Solar Energy Driven Rankine Cycle Engines

Mr. Alereza has also been active in the solar energy field. He was a key contributor to a program which assessed the feasibility of utilizing Rankine cycle engines and absorption cycle equipment for the cooling of buildings. He contributed to nearly every phase of the study which addressed working fluids, solar collectors, and heat sinks as well as a comparative evaluation of the Solar Rankine Cycle, Solar Assisted Rankine Cycle, and Solar Absorption cooling concepts.

Publications

Mr. Alereza has authored over twenty research papers which he has presented to the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). He has also served as the technical committee (TC) chairman on energy utilization. This committee is the cognizant TC for development of measurement and verification protocols being developed jointly by DOE and ASHRAE. He is the author of, or a principle contributor to, over 50 technical papers or major reports in the areas of energy analysis, energy conservation, and energy forecasting.

Some of the projects to which Mr. Alereza has been a principal technical contributor include:

- Conducting Survey of 500 Commercial Establishments in California, California Energy Commission
- Conducting Survey and Performing EUI Calculations for 60 Commercial Buildings, Southern California
- Conducting Survey of 400 Commercial Buildings in Baltimore, MD, Federal Energy Administration
- Development of Typical Commercial Buildings in California, California Energy Commission
- Development of Building Energy Standards for Residential and Commercial Buildings, State of Alaska
- Development of Non-Computerized Methodology for Building Energy Analysis, U.S. Army Construction Engineering Research Laboratory
- Evaluation of Residential Energy Consumption and Assessment of Technical Innovations Enabling Reduction of Energy Consumption, U.S. Department of Housing and Urban Development
- Development of Variable-Based Degree-Day Energy Calculation Method, National Bureau of Standards
- Energy Use and Electricity Demand Forecasting for the Commercial Sector, Electric Power Research Institute
- Comprehensive Community Planning for Energy Management and Conservation, U.S. Energy Research and Development Administration
- Energy Analysis for the South Florida Region, South Florida Regional Planning Council

- Hot Water Usage in Hospitals, Lawrence Berkeley Laboratory

Prior to forming ADM Associates, Inc., Mr. Alereza was Program Manager of the Western Office of Hittman Associates, Inc.

Mr. Alereza is a graduate from Auburn University with a Bachelor of Mechanical Engineering (B.M.E.), and has completed M.S. and the coursework for a D.Sc. in Mechanical Engineering at George Washington University. Mr. Alereza is a Registered Professional Engineer in the State of California.

Donald R. Dohrmann, Ph.D.
Principal & Director of Economics Studies

Dr. Dohrmann, a Principal of ADM Associates and Director of the Economics Studies Division, has 25 years of business and academic experience in economic analysis, survey design, and statistical analysis. He has also been responsible for evaluating the economic viability of new energy conservation technologies and preparing forecasts of the commercial acceptance of these technologies. He has considerable experience in designing studies to collect data on energy use by commercial firms and households, in analyzing the economic factors affecting the choice of energy-using technologies for commercial, industrial and residential buildings, and in forecasting the acceptance of conservation measures for such buildings. He has been the Principal Investigator on several studies that involved designing and executing surveys to collect data on the factors affecting energy use by commercial firms and households. He has been a primary contributor to the development of end-use demand forecasting models for the commercial sector.

Survey Design

Dr. Dohrmann's experience in designing surveys includes:

- For the Bonneville Power Administration, he was the Principal Investigator on a study in which a survey was conducted to collect data on the prices and energy efficiencies on residential appliances. The data collected were formatted into a database for BPA's use in formulating programs to encourage households to choose energy efficient appliances.
- For the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), he has been the principal investigator on two research projects to conduct nationwide surveys to collect and analyze data on the maintenance costs of HVAC equipment.
- For the Electric Power Research Institute, he was the Principal Investigator for a study that evaluated sample survey techniques for collecting end-use data on commercial customers of electric utilities.
- For the Pacific Gas and Electric Company, he prepared the sampling plan for conducting an on-site survey of 675 of PG&E's commercial customers.
- For the California Energy Commission, he evaluated and prepared sampling plans for conducting on-site surveys of nearly 900 commercial customers of Pacific Gas and Electric Company, Southern California Edison Company, and the Sacramento Municipal Utility District.
- For the Sacramento Municipal Utility District, he designed and drew the sample for a mail survey to collect data on the saturations of residential appliances.
- For the California Energy Commission, he was a primary contributor on a project to develop common sampling methodologies that utilities in California can use to conduct mail surveys of their residential and commercial customers.

Energy Technology Economics

Dr. Dohrmann also has conducted a number of studies in which the economic viability of new energy using technologies was assessed. These studies include:

- Preparing an analysis of the economics and market potential of producing hydrogen through coal gasification and through electrolysis.
- Estimating the market potential of newly developed solar cooling technologies.
- Analyzing the economic factors affecting the future equipment needs of electric utilities.
- Estimating the market potential for compressed air storage systems among electric utilities.
- Evaluating the market potential for repowering steam electric generating plants with gas turbines.

Energy Conservation & Load Management

Dr. Dohrmann has conducted several studies in which energy conservation and load management measures were analyzed and evaluated. Examples of the studies include:

- For the U.S. Department of Energy and the Electric Power Research Institute, he analyzed the impacts of time-of-day electricity rates on commercial and industrial firms. He was directly responsible for the design of the sampling methodology used to select 300 industrial and commercial firms for on-site interviews and for the design of the questionnaire used during the interview.
- For the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), he analyzed the costs of maintaining heating, ventilating and air conditioning equipment in office buildings. The data for this analysis were collected through a nationwide mail survey of office buildings that was conducted in conjunction with the Building Owners and Managers Association, International.
- For a major west cost utility, he analyzed the persistence of selected conservation measures among the utility's residential customers.
- For Lawrence Berkeley Laboratory, he conducted an econometric analysis to estimate fuel choice elasticities for the residential sector.
- For the State of Alaska, he evaluated the economics of energy efficiency performance standards for residential and commercial buildings in the state.

Demand Forecasting

Dr. Dohrmann has been a principal contributor on several projects to develop econometric/engineering models for forecasting the demand for electricity and natural gas in the commercial sector.

- For the Electric Power Research Institute, he prepared a report evaluating alternative methods for forecasting additions to the floorspace of different kinds of commercial buildings.

- For the Pacific Northwest Power Planning Council, he prepared an evaluation of different end-use models for forecasting energy use in the commercial and industrial sectors.
- For the California Municipal Utilities Association, he developed the specifications for simplified end-use forecasting models for the residential and commercial sectors.

Before becoming a Principal at ADM Associates, Inc., Dr. Dohrmann worked at Hittman Associates, Inc. and at the Research Center of United Technologies Corporation. He has taught economics at Yale University, the University of San Francisco, the University of Connecticut, and California State University, Sacramento.

Dr. Dohrmann graduated from Iowa State University with a B.S. in Economics. He received his M.A. and Ph.D. in Economics from Yale University.

Robert K. Johnson
Senior Consultant – Community Planner

Robert Johnson is a senior planner at Stantech, and provides consulting & planning services to ADM Associates, Inc. on an as-needed basis. He has over 22 years of experience in planning and design with a particular expertise in project management, entitlements, environmental planning, community development, resorts and entertainment based venues. Mr. Johnson takes the primary role at ADM on all projects involving the political and technical components of land development.

Mr. Johnson lead the planning / engineering team for ADM on all projects associated with the Local Energy Assistance Program (LEAP), a third party initiative program intended to foster energy efficiency in new development. Through LEAP, new development proposals submitted to cities and counties were reviewed at both the community-level (orientation, street standards, streetscape standards, etc.) and building- level (both heating and cooling equipment) to identify methods that could be used to increase energy efficiency and livability. Identified energy efficiency measures at the building-level were paid for through community-level project modifications. Mr. Johnson has directed LEAP efforts associated with projects in Huntington Beach, Temecula, Reedley, San Bernardino County, Rancho Mirage, Brea, Irvine, Moreno Valley, Riverside, La Quinta, Kern County, Ontario and Murrieta, among others. LEAP related services for projects in Southern California and the Central Valley in 1999 affected over 17,000 new dwelling units on over 4,100 acres.

Professional experience prior to ADM Associates involved work as both a community developer and consultant for a primarily private sector clientele. As the Director of Residential Development for a major Southern California land developer, Mr. Johnson was responsible for all activities involved in the development of over 1,200 acres in Riverside and San Diego Counties. In a variety of roles as a consultant, he has been responsible for the planning and design of planned communities and resorts on over 55,000 acres in California, Texas, Colorado and Maryland as well as Canada, Mexico, Spain, China and Singapore. Projects typically involved taking raw land through entitlements, design development and implementation including the construction of backbone infrastructure systems. International projects involved resorts and entertainment based venues.

Mr. Johnson has also provided planning and design assistance to a variety of public sector clients involving the preparation of general plans, specific plans, local coastal plans, environmental assessments and EIS/EIRs, among others. Most of these efforts involved an extensive public outreach program involving citizen advisory committees and public workshops as well as newsletters, videos and other information dissemination techniques.

Mr. Johnson holds a B.S. in Environmental Planning / Architecture from the University of California at Davis and a Master of Architecture degree from the University of Pennsylvania.

Safdar Chaudhry, Ph.D.
Senior Mechanical Engineer

Dr. Chaudhry is a Senior Engineer at ADM Associates, Inc. His professional experience emphasizes building energy end-use analysis, development of load management programs for utilities, and technology evaluation in residential, commercial and industrial applications.

Dr. Chaudhry has been involved in new residential community design under the Local Energy Assistance Program (LEAP.) He has participated in evaluation of energy conservation strategies proposed for several cities in California. He has evaluated these strategies for energy and cost savings for developers/builders, city governments and future homeowners.

He developed energy conservation evaluation procedures, monitored field staff, and reviewed recommended energy measures for the Mobile Energy Clinic program conducted for Southern California Gas Company. He also developed energy auditing and measure evaluation procedures conducted for the Lodging Industry Education Program conducted for SCG.

He has participated in the development of technology and performance characteristics, and formulating these characteristics as a function of parameters affecting the performance. He has used these functional relationships in DOE-2 building energy simulation, and other models, including TRNSYS and BLAST.

He has been involved in the following projects, related to Demand Side Management Program Development and Evaluation, Energy Auditing and Analysis, End-Use Load Profiles and Appliance Technology Assessment:

- New Construction Evaluation Program for Pacific Gas and Electric Co.
- Title 24 Plus Program Evaluation for SDG&E
- Technical review for State Schools Energy Conservation Improvements Program for the Office of Local Assistance, Department of General Services.
- Impact evaluation of adding insulation in refrigerated warehouses for Southern California Edison Company.
- Impact Evaluation of the Smart Energy Design Program for Portland General Electric Co.
- New Building Design Program for British Columbia Hydroelectric Company.
- Commercial Building Energy Use Simulation Program for Southern California Edison Company.
- Commercial/Industrial and Residential Audits for ENTERGY Services, Inc.
- On-site surveys of new commercial buildings for the Sacramento Municipal Utility District.
- New Construction Evaluation Program for the Sacramento Municipal Utility District.

- Cooperative study to assess application of geothermal heat pump system in schools.

While a Research Associate at the University of Birmingham, his activities included:

- Development of a computer based automatic control system for energy systems.
- Development of a computer based data acquisition system, and analysis tools to monitor and analyze performance of energy systems.
- Data acquisition, processing and analysis of energy systems.
- Mathematical modeling, and development of energy simulation algorithms and computer codes for a variety of engineering problems.
- Computer simulation of energy systems and performance optimization.

Dr. Chaudhry worked as a Research Fellow at the George Washington University, where he was involved in analysis of energy resources and devices, forecasting, input/output and net energy analysis, life-cycle costing, second law energy analysis and technological assessment. His experience also encompasses management of engineering projects and public administration, including planning, preparation, implementation, evaluation and economic and financial analysis. His work on energy systems have been widely published in the U.S. and abroad.

Dr. Chaudhry has, an M.S. in Mechanical Engineering from George Washington University and a Ph.D. in Mechanical Engineering for the University of Birmingham.

Sabaratnam Thamilseran, Ph.D., C.E.M.
Mechanical Engineer

Dr. Thamilseran is a Mechanical Engineer with ADM Associates, Inc. His responsibilities include site surveys, building energy end-use analysis, technical evaluation of energy conservation retrofits in commercial and industrial applications, and technical evaluation of new residential community design.

At ADM, Dr. Thamilseran has developed an application for the impacts of street tree canopy and street width for the purpose of reducing the “Heat Island” effects in future communities. He also developed a computerized methodology for these impact evaluations, for use by developers and city planning staff. These efforts were performed under the statewide LEAP program, sponsored by PG&E, SCE and SCG utilities. He has also contributed to Non-Residential Saturation and Measure Retention Studies, Commercial New Construction Evaluation, Commercial Audit and Survey Programs in California, Connecticut, Massachusetts, Portland and Texas.

Prior to joining ADM, Dr. Thamilseran was a member of the Energy Systems Laboratory’s Building Energy Analysis Division at Texas A&M University and contributed to the success of the Texas LoanSTAR program (a statewide energy conservation and assistance program that used \$98 million in oil overcharge funds to help the public buildings more energy efficient in Texas). While doing his post-graduate studies at Texas A&M University he has also worked for the Energy Analysis and Diagnostic center at Texas A & M University which provides free energy services to industries (a DOE funded research group based at selected universities across the nation to provide free service to small and medium industries in their surrounding area).

Dr. Thamilseran did his undergraduate work in Mechanical Engineering at University of Peradeniya, Sri Lanka, his MS in Energy Technology from the Asian Institute of technology, Bangkok, Thailand and a Ph.D. in Thermal Sciences and Energy Management in Mechanical Engineering from Texas A&M University. He has written numerous technical reports on energy conservation opportunities in various industrial facilities, and developing baseline models for measuring retrofit savings on several public buildings in Texas. He has also published peer-reviewed journal papers in ASHRAE, ASME and regional conferences.

Lillie Mozaffari
Senior Engineer

Ms. Mozaffari is a Principal and Senior Engineer at ADM Associates, Inc. She has an extensive professional career in building design and inspection. She will be responsible for identification and evaluation of building code implications for newly developed or proposed energy efficiency improvements in commercial and industrial facilities. As a Senior Engineer at ADM, she supervises the work of lighting plan checkers and field inspectors, and will assist in contractor training workshops.

As a designer, Ms. Mozaffari has been responsible for design and construction inspection of many significant projects in California. She has managed a team of fifteen engineers performing structural analysis, and has coordinated projects with architects and field inspectors. She has been responsible for developing a manual for use in the training of engineers about the Uniform Building Code. Ms. Mozaffari has designed and developed an interactive, user-friendly program for the design and fabrication of building components. This program is capable of performing the proper structural analysis and graphical display of building components for fabrication purposes.

Ms. Mozaffari was fully responsible for analysis, design and field construction inspection of many commercial and residential buildings, including:

- Pleasanton Gateway office building in Pleasanton, CA; a three story office building.
- Tennessee Point Condominium Complex, Marin County, CA; a complex of one- and two-story buildings.
- Regency Plaza, Santa Clara, CA; a thirteen story office building.
- Bank of America, Concord, CA; a four story operations and research building.

Ms. Mozaffari received her B.S. and M.S. degrees in Architectural Engineering from Oklahoma State University, and her M.S. degree in Structural Engineering from the University of California, Berkeley. She is a Registered Professional Engineer in the state of California.

Richard Burkhart
Technical Editor

Mr. Burkhart serves as ADM's Senior Technical Editor and desktop publisher.

His responsibilities include copy-editing, production and graphic design for reports and proposals, and designing and publishing marketing materials for the Duct Efficiency Training Program, Upstream High-Efficiency Gas Water Heater program and several other energy efficiency marketing programs.

He was also responsible for the production of a series of Commercial / Industrial site audit reports for *Entergy Services, Inc.* For *Kansas City Power and Light Co.* he developed automated templates using data linking functions between Microsoft Word and Excel to generate site reports, and was responsible for final copyediting and cleanup of the reports. He has also performed similar work for projects for *Southern California Edison Co.*

He is expert in the advanced techniques for a wide variety of software packages, including Microsoft Office 97 / 2000, Aldus Pagemaker 6.5, graphics arts packages such as Corel Draw 8 and Aldus Freehand, and in various World Wide Web page design software.

Prior to joining ADM, he worked as a freelance editing assistant, performing editing, graphic production and page layout for a series of operating manuals for computerized production equipment.

Mr. Burkhart earned his B.A. degree in Communications from California State University, Fullerton.



Green Community Design Assistance

REPRESENTATIVE PROJECTS

- **Lin Property – Kern County, California**
- **Parkside Estates – Huntington Beach, California**
- **Wolf Creek Specific Plan – Temecula, California**
- **Tentative Tract Map No. 53299 – Lancaster, California**

Green Community Design Assistance

Lin Property – Kern County



Proposed



Alternative

510 Single-Family Homes
29% energy savings



Green Community Design Assistance

Lin Property – Alternative Plan Recommendations

Community Design Elements:

- Increased north - south oriented lots by 258 (35 to 81%). Provided 29 additional lots.
- Street pavement reduced by an average of 10 feet (1.5 acres overall).
- Provided curb detached sidewalks and landscaped parkways with dedicated street trees.
- Reduced street lighting through strategic placement.
- Provided additional neighborhood parks and pedestrian amenities.
- Integrated highway-oriented retail center into community fabric.

Building Level Improvements:

- Sunscreens, high efficiency water heaters, high efficiency air conditioners, high efficiency space heating, shade trees and whole house fans.
- *Saved enough energy to power 240 new homes over 20 years.*
- *Saved consumers an average of \$ 390 / year / home in energy costs.*
- *Increased net project revenue by \$ 168,000.*
- *Reduced CO2 (31,000 tons) and NOx (110 tons) emissions.*

Green Community Design Assistance

Parkside Estates – Huntington Beach



Proposed



Alternative

208 Single-Family Detached Homes
20% energy savings



Green Community Design Assistance

Parkside Estates – Alternative Plan Recommendations

Community Design Elements:

- Modified internal circulation to increase north-south oriented lots by 41 (20%).
- Street pavement reduced by an average of 4 feet (.6 acres overall).
- Provided curb detached sidewalks and landscaped parkways with dedicated street trees.
- Reduced street lighting through strategic placement.

■ **Building Level Improvements:**

- Sunscreens, high efficiency water heaters, high efficiency space heater and shade trees.
- *Saved enough energy to power 11 new homes over 20 years.*
- *Saved consumers an average of \$ 80 / year / home in energy costs.*
- *Increased net project revenue by \$ 64,000.*
- *Reduced CO2 (1,500 tons) and NOx (5 tons) emissions.*

Green Community Design Assistance

Wolf Creek Specific Plan - Temecula



Proposed



Alternative

2,144 Single and Multi-Family Homes
29% energy savings



Green Community Design Assistance

Wolf Creek – Alternative Plan Recommendations

Community Design Elements:

- Modified street layout to allow for 85% of the lots to face north-south.
- Utilized multiple access points, short blocks and alleys to enable use of narrower streets.
- Street pavement width reduced by 10' - 26' street (18.4 acres overall).
- Provided curb detached sidewalks and landscaped parkways with dedicated street trees.
- Reduced street lighting through strategic placement.
- Provided better integrated commercial core.

Building Level Improvements:

- Screens, high efficiency water heaters, high efficiency air conditioners and shade trees.
- *Saved enough energy to power 600 new homes over 20 years.*
- *Saved consumers an average of \$250 / year / home in energy costs.*
- *Increased net project revenue by \$162,000.*
- *Reduced CO₂ (88,000 tons) and NO_x (270 tons) emissions.*

Green Community Design Assistance

Wolf Creek Specific Plan - Temecula



Commercial Village Center



Prototypical Neighborhood

Green Community Design Assistance

Tentative Tract Map No. 53229 – Lancaster



Proposed



Alternative

350 Single Family Homes
20% energy savings



Green Community Design Assistance

TTM 53229 - Alternative Plan Recommendations

Community Design Elements:

- 100% north-south oriented lots (29% increase).
- Short blocks, open ended cul-de-sacs and paseo/mini-park for increased connectivity.
- Street pavement reduced by an average of 4 feet (1.5 acres overall).
- Provided curb detached sidewalks and landscaped parkways with dedicated street trees.
- Reduced street lighting through strategic placement.

Building Level Improvements:

- Sunscreens, high efficiency water heaters, high efficiency air conditioners and shade trees.
- *Saved enough energy to power 100 new homes over 20 years.*
- *Saved consumers an average of \$260 / year / home in energy costs.*
- *Increased net project revenue by \$ 4,000.*
- *Reduced CO2 (13,000 tons) and NOx (46 tons) emissions.*



Green Community Design Assistance

For further information please contact:

Taghi Alereza

ADM Associates, Inc.

3239 Ramos Circle, Sacramento, CA 95827
(916) 363-8383 www.adm-energy.com